PCT WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : A23L 1/0522, 1/39, 1/226, 1/035, A23P 1/04 — A1

(11) International Publication Number: WO 95/05751

(43) International Publication Date: 2 March 1995 (02.03.95)

(21) International Application Number: PCT/GB94/01824

(22) International Filing Date: 18 August 1994 (18.08.94)

(30) Priority Data:
9317352.4 20 August 1993 (20.08.93) GB

(71) Applicant *(for all designated States except US)*: R.P. SCHERER CORPORATION [US/US]; 2075 W. Big Beaver Road, Troy, MI 48007-7060 (US).

(72) Inventors; and
(75) Inventors/Applicants *(for US only)*: GARNETT, Kelvin, Royce [GB/GB]; 6 Pleydells, Cricklade, Wiltshire SN6 6NG (GB). MOORHOUSE, Sally [GB/GB]; 13 Sherbourne Court, Ludlow Road, Maidenhead, Berkshire SL6 2RS (GB). PAGE, Nicola, Sandra [GB/GB]; Ashtree Cottage, Highworth Road, South Marston, Wiltshire SN3 4SD (GB).

(74) Agent: HITCHCOCK, Esmond, Antony; Lloyd Wise, Tregear & Co., Norman House, 105-109 Strand, London WC2R 0AE (GB).

(81) Designated States: AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, ES, FI, GB, HU, JP, KP, KR, KZ, LK, LU, LV, MG, MN, MW, NL, NO, NZ, PL, PT, RO, RU, SD, SE, SK, UA, US, UZ, VN, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).

Published
With international search report.

(54) Title: ENCAPSULATED FOOD PRODUCT FOR USE AS SAUCE BASE

(57) Abstract

A concentrated food product is provided in the form of an encapsulated suspension of powdered starch in an oil formulation comprising an oil, a mixture of fats, and an emulsifier. The oil formulation may be flavoured for particular applications. The product is used by dissolving it in a hot liquid to make a sauce. This product is manufactured by carefully mixing the oil formulation ingredients in a prescribed manner prior to encapsulation.

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AT	Austria	GB	United Kingdom	MR	Mauritania
AU	Australia	GE	Georgia	MW	Malawi
BB	Barbados	GN	Guinea	NE	Niger
BE	Belgium	GR	Greece	NL	Netherlands
BF	Burkina Faso	HU	Hungary	NO	Norway
BG	Bulgaria	IE	Ireland	NZ	New Zealand
BJ	Benin	IT	Italy	PL	Poland
BR	Brazil	JP	Japan	PT	Portugal
BY	Belarus	KE	Kenya	RO	Romania
CA	Canada	KG	Kyrgyzstan	RU	Russian Federation
CF	Central African Republic	KP	Democratic People's Republic of Korea	SD	Sudan
CG	Congo			SE	Sweden
CH	Switzerland	KR	Republic of Korea	SI	Slovenia
CI	Côte d'Ivoire	KZ	Kazakhstan	SK	Slovakia
CM	Cameroon	LI	Liechtenstein	SN	Senegal
CN	China	LK	Sri Lanka	TD	Chad
CS	Czechoslovakia	LU	Luxembourg	TG	Togo
CZ	Czech Republic	LV	Latvia	TJ	Tajikistan
DE	Germany	MC	Monaco	TT	Trinidad and Tobago
DK	Denmark	MD	Republic of Moldova	UA	Ukraine
ES	Spain	MG	Madagascar	US	United States of America
FI	Finland	ML	Mali	UZ	Uzbekistan
FR	France	MN	Mongolia	VN	Viet Nam
GA	Gabon				

Encapsulated food product for use as sauce base

This invention relates to food products and particularly to concentrated food products for use as sauce bases and flavourings. The invention seeks to provide such products in an easily dispensable liquid form.

Sauce bases and flavourings are commonly available in powder or dry form, and are diluted either directly or indirectly for use in a culinary dish. In such dry or substantially dry form, these products have a limited shelf life, and give rise to some packaging problems. Particularly, a dry package must be effectively sealed against the ingress of liquid and vapours, and failures in such a seal cannot always easily be detected. For this reason, such packages can be interfered with with relatively little risk of discovery.

The dry or substantially dry products referred to above also have a problem in their final use. During dilution uneven wetting particularly can result in the formulation of lumps, detracting from the appearance of a dish, and deleteriously affecting its quality.

The present invention is directed at a concentrated food product for use as a sauce base, in the form of an encapsulated suspension of powdered starch in a formulation comprising an oil, a mixture of fats and an emulsifier. Such a suspension is stable and has a long storage life so long as it remains out of contact with water. The suspension acts as a liquid, and can thus be packaged in sealed containers to which access can be had only with great difficulty if the container is not to show any sign of interference. The suspension will normally include a thickening agent, and a hydrophillic thickening agent such as xanthan gum is suitable in many such embodiments of the invention. Flours can also be used, but the selection of a thickening agent, if used, will of course depend upon the particular eventual

intended use.

A suspension according to the invention is confined within a flexible capsule or sachet, which can conveniently be made of a soluble comestible material such that when the product is to be used the entire capsule can be added to a dish in which it will disappear. Gelatin-based capsules are particularly suitable in this context as such materials can be substantially tasteless, odourless and colourless.

Examples of gelatin based capsules are described in the following Patent Specifications to which reference is directed:

EP -A- 0 233 231 & US -A- 4,804,542

EP-A- 0 199 034

EP -A- 0 120 248 & US -A- 4,744,988

US-A- 2 580 863

Shell materials of the above type normally comprise Gelatin and a physiologically acceptable plasticiser such as Glycerol, the Gelatin forming a matrix for the plasticiser.

A capsule material particularly suitable for confining food products according to this invention is one which comprises gelatin and a plasticiser, the gelatin forming a primary matrix for the plasticiser; and a further component compatible with the gelatin, which component forms a secondary matrix for the plasticiser. A typical such composition includes 18 t 30% by weight of gelatin and 30 to 45% by weight of the plasticiser. The further component is normally a potato starch acetate, another starch derivative, starch itself or mixtures thereof.

Normally, the amount of the further component is at least 3% by weight, and does not exceed 25%. A typical maximum is 12% by weight. The preferred further component is unbleached starch acetate, most preferably derived from potato, and a suitable product is available under the Trade Name PERFECTAMYL GEL MB from Avebe BA.

Another suitable potato starch acetate is available from Roquette Freres, under the Trade Name CLEARAM. These materials are described in greater detail in International Patent Application No. GB94/01361 of 23rd June 1994 to which reference is directed.

In products according to the invention, the ratio by weight of the oil formulation to the suspended starch and other agents, if used, is normally in the range 1:4 to 3:1, preferably 1:3 to 2:1, and most preferably 1:2 to 3:2. The oil formulation will normally comprise 65 to 90% by weight of oil (preferably 72 to 90%), and typical quantities therein of the mixture of fats and the emulsifier are 5 to 30% (preferably 5 to 20%), and 0.5 to 12% (preferably 1 to 8%) respectively. A particularly preferred oil formulation comprises 83% vegetable oil; 10% fats mixture; and 7% emulsifier. However, these amounts and particularly that for the emulsifier will vary according to the desired nature of the eventual sauce; the materials to be suspended, and of course any additional flavourings.

The mixture of fats is of particular importance in the oil formulation as it is this component that has a critical effect upon the maintenance of the suspension. A product according to the invention will normally be prepared using fats having different melting points to ensure that the suspended components remain suspended as the initially blended product cools. A typical mixture of fats has a high and a low melting point fat. The high melting point fat can be chosen to solidify in the range 50 to 65°C whereas the low melting point fat solidifies at a lower temperature of say 30 to 40°C. In this way, the product is protected from separation as the standard processing is conducted.

A typical range of weight ratios of high melting point fat to low melting point fat is 1:2 to 1:7, preferably 1:3 to 1:6.5 with a particularly preferred ratio being 1:4. The low melting point fat is the more

important of the fats in the final product as high melting point fats alone would become too hard and brittle hence not protect the suspension in the same manner.

A product according to the invention can be prepared by melting two fats together and adding them to a portion of the oil which has been preheated. This is further mixed with the remaining oil, emulsifier and powder ingredients to form the suspension. Milling the mixture to eliminate any powder agglomerates and deaerating the final mixture are preferred additional steps which can assist in obtaining a stable product.

Suitable flavourings can be added at any stage during the preparation of a product according to the invention and indeed, flavourings may be inherent in one or more of the constituents already referred to. In some embodiments of the invention, the oil formulation can be used alone as a culinary supplement or as a sauce base, merely requiring the addition of a hot liquid such as water or milk. The hot liquid may already be part of a food dish. Once again, flavourings may be added or be inherent in one or more of the constituents. Thus, an encapsulated flavoured oil formulation can be used in place of a conventional stock cube.

The invention will now be described in the context of the following non-limiting examples:

Example 1

White Sauce Base

	% by weight	mg/cap
* Soya Bean Oil	32.08	4684
* Loders 7	3.00	437
* Lecithin	2.67	390
Potato Starch	53.48	7808
* Yellow Beeswax	0.75	110
Xanthan gum	8.02	1171
	100.00	14600

* = Oil formulation component

Oil formulation = 5621mg Oil : Others = 1 : 1.597

Others = 8979mg

Oil Formulation			%
Oil	=	4684mg	83.33
Fats	=	547mg	9.73
Emulsifier	=	390mg	6.94
		5621mg	

Fats = High Mpt : Low Mpt = 1 : 3.97

The sauce base was made by mixing the fats with a preheated portion of the oil, after which the remaining components were added. THe suspension was then delivered to and enclosed in a gelatin-based capsule having the following composition by weight:

Gelatin 24; Glycerol 40; Water 20; Potato Starch Acetate 6; Bleached Potato starch acetate 10.

The sauce proper was made by adding the suspension to 300 mls of cold milk in a pan which was gently heated with simultaneous gentle stirring. The result was a substantially lump free sauce with a grainy white appearance, the grains were rice shaped, less than 1mm long. The consistency was of a thick pouring sauce with a neutral taste and a smooth mouthfeel (grains not detectable).

Example 2

White Sauce Base

	% by weight	mg/cap
* Soya Bean Oil	32.11	7000
* Hydrogenated Soya Bean Oil	0.92	200
* Loders 7	5.73	1250
* Lecithin	0.46	100
Plain Flour	13.76	3000
Potato Starch	41.28	9000
@ Maxavor Gistex C	4.59	1000
** Fried Onion Flavour	1.15	250
	100.00	21800

* = Oil formulation component

** = Flavour as part of oil formulation

@ = Flavour as part of "others"

Oil formulation = 8800mg Oil : Others = 1 : 1.477

Others = 13000mg

Oil Formulation		%
Oil (Soya Bean + Flavour)	= 7250mg	82.39
Fats	= 1450mg	16.48
Emulsifier	= 100mg	1.14
	8800mg	

Fats = High Mpt : Low Mpt = 1 : 6.25

The sauce base was made in the same way as that of Example 1, but using only 250mls of milk. The result was a very smooth lump-free pouring sauce. There were no visible grains or particles. The savoury flavour was good, with a smooth and slightly gummy feel in the mouth.

Example 3

White Sauce Base

	% by weight	mg/cap
* Soya Bean Oil	34.86	7600
* Hydrogenated Soya Bean Oil	0.92	200
* Loders 7	5.73	1250
* Lecithin	0.92	200
Potato Starch	27.52	6000
@ Maxavor Gistex C	4.59	1000
** Fried Onion Flavour	1.15	250
Xanthan Gum	5.96	1300
@ Milk Powder	18.35	4000
	100.00	21800

* = Oil formulation component

** = Flavour as part of oil formulation

@ = Flavour as part of "others"

Oil formulation = 9500mg Oil : Others = 1 : 1.295

Others = 12300mg

Oil Formulation		%
Oil (Soya Bean + Flavour)	= 7850mg	82.63
Fats	= 1450mg	15.26
Emulsifier	= 200mg	2.11
	9500mg	

Fats = High Mpt : Low Mpt = 1 : 6.25

The sauce base was made in the same way as that of Example 1, but using 300mls of water. The result was a smooth essentially lump-free thick pouring sauce. A few loosely bound agglomerates of milk powder were visible. The taste was similar to that of Example 2, but lacked the feel of "body" from the milk. A less opaque sauce than either of those of Examples 1 and 2.

Example 4

White Sauce

	% by weight	mg/cap
* Soya Bean Oil	37.53	8410
* Lecithin	1.78	400
Potato Starch	40.16	9000
Plain Flour	13.39	3000
* Hydrogenated Soya Bean Oil	0.54	120
* Loders 7	2.14	480
@ Maxavor Gistex C	4.46	1000
	100.00	22410

* = Oil formulation component

@ = Flavour as part of "others"

Oil formulation = 9410mg Oil : Others = 1:1.382

Others = 13000mg

Oil Formulation %

Oil (Soya Bean + Flavour)	= 8410mg	89.37
Fats	= 600mg	6.38
Emulsifier	= 400mg	4.25
	9410mg	

Fats = High Mpt : Low Mpt = 1:4

The sauce base was made in the same way as that of Example 2, using 250ml milk. This formulation allows separation of approximately 10% of oil in the capsule. A higher fat ratio may be preferred for some products. Produces a smooth lump free pouring sauce as Formulation 2. A very small quantity of oil remains as droplets on the surface of the sauce.

Example 5

Cheese Sauce

	% by weight	mg/cap
* Soya Bean Oil	22.56	4740
* Hydrogenated Soya Bean Oil	0.52	110
* Loders 7	3.10	650
Plain Flour	14.29	3000
Potato Starch	28.57	6000
@ Maxavor Gistex C	2.38	500
@ Cheese Powder P4	14.29	3000
* Butter Oil	14.29	3000
	100.00	21000

* = Oil formulation component

@ = Flavour ingredient as part of "others"

Oil formulation = 8500mg Oil : Others = 1:1.471

Others = 12500mg

Oil Formulation

		%
Oil (Soya Bean)	= 4740mg	55.76
Fats	= 760mg	8 .9
Butter Oil	= 3000mg	35.29
	8500mg	

Fats = High Mpt : Low Mpt = 1:5.91

Note Butter oil acts as a combination of oil, low melting point fat and emulsifier. It is not possible to quantify the effect of each action.

The sauce base was made in the same way as that of Example 1, using 200ml of milk. The result was a very smooth, lump free, thin pouring sauce. Smooth mouth feel with a dairy type taste including a cheese note. A cheese flavour booster is required to produce a stronger flavour profile, but would readily coat pasta as made here.

Example 6

Custard (sugar free)

	% by weight	mg/cap
* Soya Bean Oil	30.33	6000
* Hydrogenated Soya Bean Oil	2.53	500
* Butter Oil	15.17	3000
Cornflour	50.56	10000
@ Riboflavin	0.10	20
@ Aspartame	0.51	100
@ Vanillin	0.05	10
@ 25% Salt Solution	0.76	150
	100.00	19780

* = Oil formulation component

@ = Flavour/colour ingredients as part of "others"

Oil formulation = 9500mg Oil : Others = 1 : 1.082

Others = 10280mg

Oil Formulation		%
Oil (Soya Bean)	= 6000mg	63.15
Fats	= 500mg	5.26
Butter Oil	= 3000mg	31.58
	9500mg	

Fats were solely high melting point to aid the set of the low melting point fat of the Butter Oil.

The sauce base was made in the same way as that of Example 1, using only 200mls of milk. The result was a smooth pale yellow sauce with thin pouring sauce consistency. Two very small (less than 2mm) unbroken soft powder agglomerates were visible at the end. Pleasant buttery, vanilla taste with correct sweetness level and a short mouthfeel texture. A few oil droplets remain on the custard surface.

Example 7

Chocolate Sauce (sugar free)

	% by weight	mg/cap
* Soya Bean Oil	24.71	5250
* Hydrogenated Soya Bean Oil	2.35	500
* Butter Oil	14.12	3000
Cornflour	42.35	9000
@ Aspartame	0.47	100
@ 25% Salt Solution -	0.71	100
@ Chocolate Flavouring	1.18	250
@ Cocoa Powder	14.12	3000
	100.00	21250

* = Oil formulation component

@ = Flavour/ingredient as part of "others"

Oil formulation = 8750mg Oil : Others = 1 : 1.429

Others = 12500mg

Oil Formulation		%
Oil (Soya Bean)	= 5250mg	60.00
Fats	= 500mg	5.71
Butter Oil	= 3000mg	34.29
	8750mg	

Fats are solely high melting point to aid the set of the low melting point fat of the Butter Oil.

The sauce was made in the same way as that of Example 6. The result was a similar smooth textured thin pouring consistency as with the custard, maybe closer to a coating sauce. Pale brown drinking chocolate colour with brown flecks which dissipate on standing. A very pleasant tasting milk chocolate sauce.

When capsules containing this product were added to milk just brought to the boil, and stirred off the heat then reboiled, a similar mix resulted. The brown flecks were initially more prominent and a few 2mm agglomerates were seen. All these dissipated on standing indicating they require time rather than stirring to fully dissolve.

Example 8

Garlic & Herb Sauce

	% by weight	mg/cap
* Soya Bean Oil	26.59	4600
* Hydrogenated Soya Bean Oil	2.31	400
* Loders 7	7.23	1250
* Lecithin	0.58	100
Potato Starch	28.90	5000
Cornflour	28.90	5000
@ Chicken Spice	0.29	50
** Oregano Essence	1.16	200
@ Garlic Flavour	2.89	500
** Basil Essence	1.16	200
	100.00	17300

* = Oil formulation components

** = Flavour as part of oil formulations

@ = Flavour as part of "others"

Oil formulation = 6750mg Oil : Others = 1 : 1.56

Others = 10550mg

Oil Formulation		%
Oil (Soya Bean + Flavours)	= 6000mg	74.07
Fats	= 1650mg	24.4
Emulsifier	= 100mg	1.48
	6750mg	

Fats High Mpt : Low Mpt = 1:3.125

The sauce was made in the same way as that of Example 6. The result was a very smooth and lump free off white pouring sauce. A smooth slightly gummy mouth feel with a good smell and taste of herbs.

Example 9

Tomato Sauce

	% by weight	mg/cap
* Soya Bean Oil	27.86	5850
* Hydrogenated Soya Bean Oil	1.43	300
* Loders 7	5.95	1250
* Lecithin	2.38	500
Potato Starch	14.29	3000
Cornflour	23.81	5000
@ Aspartame	0.48	100
@ Tomato Powder	14.29	3000
@ Tomato Flavouring	4.76	1000
** Basil Essence	2.38	500
@ Citric Acid	2.38	500
	100.00	21000

* = Oil formulation components
** = Flavour as part of oil formulation
@ = Flavour/ingredient as part of "others"

Oil formulation = 8400mg Oil : Others = 1 : 1.5
Others = 12600mg

Oil Formulation %

Oil (Soya Bean + Flavour) = 6350mg 75.60
Fats = 1550mg 18.45
Emulsifier = 500mg 5.95
8400mg

Fats High Mpt : Low Mpt = 1:4.17

Performance Assessment

Used 200ml milk.

The sauce was made in the same way as that of Example 6. A curdling like effect occurred during heating of this sauce which requires a more thorough stirring at the boiling point to fully disperse. A smooth lump free thin pouring sauce still resulted with noticeable flecks from the red tomato powder. A pale pink coloured sauce with a short texture.

Example 10

Butter and cheese

	% by weight	mg/cap
* Butter Oil	32.00	4000
* Sunflower Seed Oil	32.00	4000
Cheese Powder P4	24.00	3000
Edlong 600	12.00	1500
	100.00	12500

* = Oil formulation components

Oil formulation = 8000mg
Others = 4500mg

Oil : Others = 1 : 1.56
(1.78:1)
(3.56:2)

Oil Formulation

Butter Oil acting as Fat, Emulsifier and Oil in undefinable ratios.

Comments

In this formulation no high melting point fats are used which forms a paste which is temperature sensitive. The mix is quite slow to form a stable matrix for powder suspension and heat (>30°C) destroys the matrix formed.

Performance Assessment

125gms of dried pasta is boiled in salted water until cooked. The pasta is drained and returned to the pan. Laboratory scale mix in an air filled gelatin-based capsule is added. Stirring the capsule in the hot, wet pasta produces a coated, flavour pasta using the residual water. No lumps of powder are left.

Example 11

Chicken Stock

	% by weight	mg/cap
* Soya Bean Oil	42.55	1336
Lecithin	0.51	16
* Beeswax	3.17	99.6
* Loders 7	12.69	398.4
@ Maxavor Rye C	20.54	645
@ Maxavor Gistex C	20.54	645
	100	3140

* = Oil formulation components

@ = Flavour ingredient as part of "Others".

Oil formulation = 1850mg Oil:Others = 1:0.70 = 1.43:1
Others = 1290mg = 2.86:2

Oil Formulation %

Oil	= 1336mg	72.2
Fats	= 498mg	26.9
Emulsifier	= 16mg	0.9
	1850mg	

Fats High Mpt : Low Mpt = 1:4

Performance Assessment

On adding to 190ml of boiling water, capsule rupture in approximately 5 seconds is achieved, with full dissolution in 30-45 seconds. An oily surfaced chicken stock results which is lump free and can be used in casseroles or other applications normally requiring "stock cubes" which are notoriously difficult to dissolve. A variation using chicken fat to replace the Soya Bean Oil and some of the fats is also possible.

A typical manufacturing process for a product according to the invention, prior to encapsulation, comprises the following steps:

1. Oil and emulsifier weighed and mixed.
2. Fats weighed and mixed.
3. Gentle heating until all fats melted
4. Cooling to between room temperature and 30°C.
5. Powders weighed and stirred into oil formulation.
6. Liquid flavour ingredients weighed, added and stirred in.

In the preparation of a product not all the oil formulation need be heated to melt the fats; only sufficient to ensure the fats did not solidify into an unworkable block within the cold oil when mixed prior to the addition of the elements to be suspended. Once the components are uniformly dispersed within the hot mixture, it is allowed to cool to the stable suspension described above.

In the encapsulation process a Silverson mixer is used to help incorporate powders in the suspension which is then mix stirred at high speed, passed through a colloid mill to remove agglomerates, and then subject to deaeration treatment. It is then encapsulated using a rotary die machine in a gelatin composition comprising:

Gelatin	43.4
Glycerol	20.0
Water	36.6

The above composition when formed into a capsule can be dissolved in hot water to form a thickened base for a sauce. Other suitable capsule compositions are those described in International Application No. GB94/01361, referred to above. The addition of further components to the formulation such as flavourings and a milk powder similarly suspended by adjusting the oil formulation to powder ratio results in a white sauce. The addition of cocoa powder, sugar and other minor

flavour components results in a chocolate sauce.

These are no more than illustrations of how a sauce base in accordance with the invention might be used. Apart from the additional supplementing of the composition with flavourings, the relative proportions of the components could well vary with regard to the nature of the end product and the quantities in which it is to be prepared. As noted above, products according to the invention are preferably confined in a comestible capsule, and different sizes of capsule can tolerate different thicknesses or viscosity in the suspension.

Typical suitable components for use in products according to the invention are listed below. the list is not exhaustive, but offered as an indication of the range of components that can be used.

Oils

Soya Bean, Sunflower, Olive, Rape Seed, Safflower, Wheat Germ, Coconut and Fractionated Coconut, Ground Nut, Corn Oil, Sesame Oil.

Fats

High melting point (> 40°C)

Beeswax, Hydrogenated Soya Bean Oil, other hydrogenated plant oils, animal fats.

Low melting point (< 40°C)

Loders 7, Cocoa butter, Cocoa butter equivalents, Butter Oil, partially hydrogenated plant oils, Chicken fat.

Emulsifier

Phospholipids, Lecithin, Butter Oil etc.

Thickeners

Natural Starches:	Potato Corn/maize, Wheat, Rice, Tapioca
Modified Starches:	Crosslinked, pre-gelatinised, stabilised
Gums:	Xanthan, Locust Bean, Guar, Carboxy,

M thyl cellulose, micro crystallise cellulose, Gellan, Soluble Fibres.

Flavours (Liquid or Solid)

Spices, Herbs, Chicken, Beef, Pork, Lamb, Other meat, Vanilla, Chocolate, Honey, Lemon, Orange, Other fruit, Cheese, Other dairy, Tomato, Carrot, Celery, Onion, Other vegetable

Yeasts, Yeast Extracts, Hydrolised vegetable proteins, Ribonucleotides, Mono-sodium Glutamate, other Glutamates, Cheese enhancers.

Sweeteners

Sugar, Molasses, Sorbitol, Aspartame, Sodium Saccharin, Acesulphame K.

CLAIMS

1. A concentrated food product in the form of a suspension of powdered starch in an oil formulation comprising an oil, a mixture of fats and an emulsifier, the suspension being confined within a flexible comestible capsule.

2. A product according to Claim 1 wherein the capsule material is soluble.

3. A product according to Claim 2 wherein the capsule material comprises gelatin.

4. A product according to Claim 3 wherein the capsule material includes glycerol and a potato starch acetate.

5. A product according to any preceding Claim including a hydrophilic thickening agent in the suspension.

6. A product according to Claim 5 wherein the hydrophilic thickening agent is xanthan gum.

7. A product according to any preceding Claim wherein the ratio by weight of the oil formulation to the powder in the suspension is in the range 1:4 to 3:1.

8. A product according to any preceding Claim wherein the oil formulation comprises 65 to 90% by weight of oil.

9. A product according to Claim 8 wherein the oil formulation includes 5 to 30% by weight of the mixture of fats, and 0.5 to 12% by weight of the emulsifier.

10. A product according to any preceding Claim wherein the mixture of fats in the oil formulation comprises a low melting point fat and a high melting point fat with a ratio by weight in the range 7:1 to 2:1.

11. A product according to any preceding Claim wherein the starch is a potato starch.

12. A product according to any preceding Claim wherein the suspension includes a flavouring ingredient.

13. A method of manufacturing a food product according to any preceding Claim which method comprises:

melting the mixture of fats and adding the mixture to a preheated portion of the oil;

mixing the fats and preheated oil with the remainder of the oil, the emulsifier and the powdered starch to form the suspension; and

confining the suspension in a flexible comestible capsule.

14. A method according to Claim 13 including the steps of milling and deaerating the suspension prior to encapsulation.

15. A method of making a comestible sauce comprising the step of dissolving a product according to any of Claims 1 to 12 in a hot liquid.

16. A method according to Claim 15 wherein the hot liquid is already part of a food dish.

17. A method according to Claim 15 or Claim 16 wherein the hot liquid comprises milk.

INTERNATIONAL SEARCH REPORT

Intern. al Application No
PCT/GB 94/01824

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 A23L1/0522 A23L1/39 A23L1/226 A23L1/035 A23P1/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 A23L A23P

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP,A,0 173 646 (BATTELLE MEMORIAL INSTITUTE) 5 March 1986 see Example I ---	1-17
Y	SEIFEN-öLE-FETTE-WACHSE vol. 100, no. 12 , 20 June 1974 , AUGSBURG pages 281 - 294 J.VERONESE 'Mikroverkapselung von Aromen, Riechstoffen, Wirkstoffen und ölen' see page 282 - page 283 ---	1-17
Y	EP,A,0 224 157 (R.P.SCHERER GMBH) 3 June 1987 see Example 3 --- -/--	1-17

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
11 November 1994	07. 12. 94

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax (+31-70) 340-3016	Bendl, E

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Intern[illegible]l Application No
PCT/GB 94/01824

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP,A,0 337 509 (R.P.SCHERER GMBH) 18 October 1989 cited in the application see col.1, 3, 4	1-17

2

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/GB 94/01824

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
EP-A-0173646	05-03-86	CH-A-	659765	27-02-87
		DE-A-	3561981	05-05-88
		JP-A-	61040759	27-02-86
		US-A-	4671966	09-06-87
EP-A-0224157	03-06-87	DE-A-	3541304	27-05-87
		AU-B-	583166	20-04-89
		AU-A-	6555986	28-05-87
		JP-A-	62142118	25-06-87
		US-A-	4849218	18-07-89
EP-A-0337509	18-10-89	DE-A-	3529694	26-02-87
		AU-B-	589678	19-10-89
		AU-A-	6222086	10-03-87
		CA-A-	1267841	17-04-90
		DE-D-	3689265	09-12-93
		WO-A-	8701034	26-02-87
		EP-A,B	0233231	26-08-87
		JP-T-	63500597	03-03-88
		US-A-	4804542	14-02-89